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NEW SOVIET WEAPONS

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The following is a report of the experiences of a German scientist, Dr H. Tellman, who was taken prisoner by the Russians in 1943 and who worked for them as a scientist until he escaped by airplane. Dr Tellman now lives in Argentina.

After my capture in 1943, I was interviewed in the Chakalov prisoners' camp and offered a position as scientist in the service of the Soviets. After having been given assurances that my work would not be directly connected with the armament industry, at least for the duration of the war, I accepted.

My first job, to which I was sent 2 weeks later, was at Molotov, where a huge aluminum plant was being built. Its power supply was to come from the hydroelectric stations of the Central Urals. Work went on 24 hours a day, weather permitting, most of it being carried out by women. My task was the supervision of the laying of the high-power lines which went all the way into the Urals. The machines in the plant was nearly all American made, and had been brought in via Siberia.

At the beginning of 1944, I was requested to work for the Cosmic Ray Laboratory at Tbilisi, which was operating under the supervision of the Ministry of the Armed Forces. The institute [not further identified] was housed in a former palace in Tbilisi, and was directed by a well-known Russian scientist who had spent much time in Germany and spoke German well. The altitude laboratory of the institute was located in the mountains, at an altitude of more than 3,000 meters. The work consisted of investigation of the nature of cosmic rays and observation of the changes in their intensity in the course of one year.

The institute was inspected by a commission of politicians and scientists from Moscow. An old colleague of mine who had studied with me at the University of Berlin before the war turned out to be a member of this commission, and offered me a position in Moscow. Six weeks later I was called to Moscow by the War Academy. At first I was busy only with conferences in the War Academy and

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in offices of political authorities. They seemed to be trying to get a good picture of my scientific capabilities and political opinions. I was also given indoctrination in Soviet ideology, and my friend told me confidentially that it was necessary for me to attend party functions, but he added: "You can think of whatever you like while you are there." A few days after these preliminaries I was assigned to a newly founded commission, charged with supervising development in various special fields and with operating as a consulting authority in the case of difficulties. The commission consisting of 14 scientists, nearly all of them trained abroad, either in Germany or in the US, who had been working in these countries for very long periods of time, and who were all very capable specialists.

My friend, Professor D. took me along on an inspection trip to Tomsk where the Russians had built an experimental station for V-2 rockets. I met an old acquaintance from Germany, Engineer P., who was in charge of the technical work of the entire installation. At first, the only experiments performed were the same kind which I knew from my work in Germany, but later, during my stay, new designs with much higher power were developed. Work was also carried out in the field of radio guidance of rockets. I saw the launching of several giant rockets whose dimensions considerably exceeded those of the V-2. The measuring devices recorded ceiling altitudes of 210 kilometers in these flights. A new rocket is still in the development stage. It weighs 40 tons and is expected to reach an altitude of more than 400 kilometers. I was also interested in the design of a multistage rocket, whose first stage was to be powered by nuclear energy.

To study the effect of the high accelerations on the living organism, the Russians placed into the warhead a parrot in an insulated cage. The warhead otherwise housed the recording instruments. The parrot was found to have suffered no ill effects.

The experimental rockets in the development stage today are nearly powerful enough to fly from the earth to the moon and to leave the earth's gravitational field.

A second trip took me to Kalinin. A large rocket-aircraft-testing station has been built there. The rocket aircraft developed there are based on the design of the German V-1. Essentially, they are nothing but manned rockets. The wings are small and sweptback. The cockpit is hermetically sealed and holds a two-man crew. The Soviets have also succeeded in obtaining the services of most of the important German rocket experts, who have attained very high speeds with their rocket aircraft; in one case, an aircraft equipped with three rocket engines reached a speed of nearly 2,000 kilometers per hour.

During one test flight which I witnessed, the material did not withstand the terrific strain, and the aircraft crashed, killing the German pilot. These aircraft are started from catapults. Fuel consists of a hydrocarbon compound and nitric acid. One of the German test pilots succeeded in reaching an altitude of 25,000 meters with one of these aircraft. The immense power of the engines was demonstrated to me when a rocket aircraft turned over during take-off and exploded. The explosion made a crater of 15 meters in diameter and 3 meters in depth, and the aircraft was torn into tiny fragments. These rocket aircraft are still in the experimental stage. However, the USSR has many types of jet aircraft which are already in service. They were designed and built in a plant near Voronezh by former members of the Messerschmitt firm.

One of my inspection trips took me back to the cosmic radiation institute at Tbilisi. My former chief there told me that he had lost both his sons as a result of bacteria experiments. One of them was a bacteriologist, the other a doctor. They had been ordered to set up a laboratory on a small island near Baku where dangerous bacteria were to be investigated and cultures grown. One

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of their colleagues infected himself with a culture, and transmitted the disease to the rest of the staff, so that all 40 members of the staff died within a few hours after terrible agony. The laboratory, I was told, now has a new staff, but my friend did not know what work was being conducted there.

With Professor D., I witnessed a test of a new weapon in the Caucasus. We went to the edge of a deep valley, which had vertical walls almost 300 meters high. Heavy smoke was generated in the valley by means of rocket projectiles fired from an adjacent plateau. Then another type of rocket was fired into the smoke. These second rockets generated a dense white vapor. As soon as the vapor mixed with the smoke, a terrific thunderstorm broke loose below us. We had to wear special gas masks. Lightning and thunder followed in uninterrupted succession, and the entire area seemed to be a mass of flame. Whenever the storm let up, new rockets were fired and its intensity increased again. The storm lasted for 2 hours.

When we investigated the area the next day, we found that not one rock, not one tree or shrub had been spared by the lightning bolts. Nobody could have survived in that hell. It was obvious that the electric charges had always gone from the cloud to the ground, a proof that the cloud must have been electrically charged. These artificial thunderstorms are designed to take the place of artillery bombardment in mountainous areas, where, as was shown during World War II, the effectiveness of artillery is limited, because the terrain offers too much opportunity for cover. However, there is no cover against this new weapon.

During a conversation with Professor D., I stated once that I would like to get out of the "golden cage" and rejoin my family in Germany. He answered that it would be better if I had my family come to Moscow instead, since he had it on good authority that none of the German scientists and workers in the Soviet Union would be allowed to leave the country, because they knew too much and the Soviets would not risk letting this information out of the country. When I answered that I would simply escape from the country if I was not allowed to leave legally, he warned me that the controls were very strict and that the frontiers had recently been heavily fortified. He further said that I would only be imprisoned or perhaps executed for my attempt.

The day after this conversation, D. and I went to Novorossiysk to attend a special experiment. We went aboard a small cruiser. We could get no definite information on the nature of the experiment, but the presence of a large number of high staff officers and political functionaries indicated that it was a test of special importance. After we had put out to sea, we were met by a flotilla of six large submarines which took us on a southerly course. After we had lost sight of the coastline, the convoy spread out. The submarines submerged after traveling another mile, surfaced again after half an hour, returned to the cruiser to make a report, and then left for the north. Suddenly, about half a mile in front of us, a steep wall of water rose from the calm sea, and moved rapidly toward the south. The tidal wave was about 20 meters high, and would have wrecked any vessel within its path. The weird part of the demonstration was the fact that the wave did not expand, either laterally or to the rear, and rose up out of the water like a solid wall without disintegrating, in contrast to the phenomenon observed in underwater explosions where the water rises up in a fountain. It was also peculiar that we noticed no concussion and no explosion, and that we felt only a slight swell on our cruiser.

I tried to obtain some information on the experiment, but the answers were evasive, and Professor D. finally put an end to my questions by saying: "It is not good to want to know everything right away. In due time you will realize how important it was for you to attend this test." I gathered from the conversations among other observers that this had been a test of a means of warfare and that great results were expected from its further development.

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In the USSR, submarine construction, together with aircraft construction further development of the V-2 rocket, and the development of a practicable atomic bomb, is a priority project of the armament industry. Prior to the war, the Russian built, at Leningrad, only the standard type submarine of 900 tons displacement, not counting a few experimental types. Only after the war, when the Russians had occupied Berlin and the German Baltic ports and had obtained the German design data and ships, did they take up submarine construction intensively. In 1946, the Russians succeeded in getting a number of the members of the staff of the Glueckauf Engineering Office at Blankenburg in the Harz Mountains -- during the war the central designing office for German submarines -- to return there by offering them high salaries. The construction of the German Type 26 submarine, the so-called Walther submarine, was then resumed. Some of the Blankenburg staff later went to Koenigsberg and to Leningrad, others returned to the Western zone.

The captured U-boats were concentrated at Leningrad and at Kronshtadt. The Russians are working on further development of the German Type 21 submarine. In the summer of 1948, about 15 submarines of this type were under construction at the Leningrad Navy Yard. An interesting improvement instituted by the Russians is the quick-loading mechanism of the bow torpedo tubes. The German quick-loading mechanism did not function properly, but the Russians have improved it to such an extent that all six tubes in the box can now fire three times within 3 minutes.

The Russians are also experimenting with the installing of rocket launchers on Type 21 submarines. The launcher resembles a torpedo tube. It is set up in front of the conning tower, and operated from inside the ship. It will still function when the ship is submerged to half the height of the conning tower. The rockets are powered by liquid fuel, consisting of a hydrocarbon -- nitric acid mixture with automatic ignition. Fuel feed is by compressed air. The rockets have a range of about 7 kilometers, and their accuracy is adequate.

At Odessa, the Russians are building two-man submarines developed from the German design. They are powered by a high-rpm diesel engine. The captain of the submarine can stand up on his seat when the ship is surfaced, and the upper part of his body protrudes from the conning tower. The engineer sits in front of the engine, and can start the engine with a hand crank, in case the battery is run down and no longer has enough power to operate the self-starter. The tower is equipped with a short periscope which is retractable. The submarine carries two torpedoes underneath the hull. This type of submarine is manned only by volunteers. It is capable of a speed of about 12 nautical miles.

The Russians are testing three new types of torpedoes. The first is the well-known acoustic torpedo, which is automatically attracted to the target by the noise of the target's propellers. This version has been developed to a high degree of perfection, and possesses high accuracy. Of course, it still suffers from the disadvantage that the target can tow noise-producing dummies which will deflect the torpedo, provided they operate in the proper frequency range.

The second version used ultrasonic guide beams. The frequency is in the range of 800 kc. The results obtained with this torpedo were very satisfactory up to a distance of 3 nautical miles. The torpedo is not very susceptible to jamming, unless the jamming is tuned exactly to the guide-beam frequency. At large distances, the guidance becomes less reliable, because it is difficult to produce ultrasonic waves at that frequency with a sufficiently large range.

The third version employs infrared radiation for automatic steering, and uses the principle of radar. This design was first developed by the Germans toward the end of the war and then perfected by the German engineers for the Russians. The torpedo is very accurate, even at long ranges, provided the infrared ray generator functions properly. Since this is not always the case, 35 percent of the torpedoes misfire.

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From the Black Sea, I was called to the Aral Sea to attend another experiment. On reaching the Aral Sea, I was fitted with arctic clothing. We set up some measuring instruments and photographic equipment on a hill overlooking the water. A squadron of bombers dropped about four 250-kilogram bombs about 2 kilometers out into the sea. A few moments after the bombs hit, the water suddenly became very calm, and seemed to be freezing over, while the normal motion of the water continued 3 or 4 kilometers further out, as we could observe through our field glasses. The waves became bigger, obviously because a strong wind had sprung up out there. The bay in front of us began to become foggy, and we went closer, because visibility was getting poor.

At a distance of about 400 meters from the shore, we were hit by a very cool flow of air, and the fog became progressively denser. The fog began to move violently, resembling the smoke over a great fire. The temperature kept dropping. While it had been +18° C before the start of the experiment, it had now dropped to -26° C at a distance of 300 meters from the shore. We froze, despite our arctic clothing. At another 100 meters closer to the shore, it had dropped to -43° C, and after only ten more steps, to -50° C. There was no point in going further, because the fog was now limiting visibility to one meter. The wind had become a gale. On the way back to the hill, we got lost in the fog, and took a long time to find our original observation point.

The fog lifted after 4 hours, and the temperature began to rise again, so that we could finally go down to the shore. The entire bay was covered by a thick sheet of ice, extending over about one square kilometer. The ice was over half a meter thick at the points of impact of the bombs. The waves created by the high wind had solidified in the middle of their motion, and the sea resembled a jagged arctic landscape. The temperature over the bay was still very low, and we were told that it would not thaw out for several days. Such bombs or rockets, when used against harbors, must have disastrous results.

A few days after my return to Moscow, I was taken to Peenemuende. The installation is operating full blast, and the region between Usedom and Greifswald is one single armed camp. There is no trace left of the demolitions carried out in 1945. Over 150 German scientists are working around the clock developing rocket projectiles and rocket-propelled fighter aircraft. I was able to determine that the Russians had obtained all German data for all the versions of the V-2 rocket. Special attention was given to the A-8 version of this rocket, which can fire 6,000 kilometer across the Atlantic with a flight time of 42 minutes.

The tests with guided rockets at Peenemuende made a great impression on me. Rockets were launched from sites in the Leningrad-Kronshtadt area. They landed with almost dead accuracy on the island of Pol. The rockets are launched to an altitude of 12,000 meters, and the propulsion unit of the rocket is cut in at that altitude by radio signal. The rockets then fly in a straight line, controlled by radio and radar signals from picket boats in the Baltic, until a measuring station stops them over the island of Pol and breaks off the flight there. The rockets come down nearly vertically and land near the target. The tests were repeated several times, and the results, in regard to accuracy, were always equally good. I am convinced now that the sensational reports once heard in Germany about rockets over the Baltic were not just imagination, but that rockets from Leningrad sometimes flew as far as Swinemuende, and that some of them supposedly got lost and flew to Sweden.

My work at Peenemuende consisted mostly in trying to persuade the German scientists there to go to work for the War Academy in Moscow. In 1945, the Russians shanghaied the scientists, but stopped this practice in 1948, since they found out that they could not obtain good work from scientists who were in the USSR under duress. During my conversations with my colleagues there I found that the research results obtained at Peenemuende should be a matter of great concern to other countries. The accuracy attained with rockets over the comparatively short range of 1,100 kilometers between Leningrad and Usedom was also attained

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over a 2,500-kilometer range. These tests were conducted between the Kronshadt-Leningrad area and the great rocket-testing site at Omsk in Siberia. On the basis of these tests, it could easily be possible for the Russian using rockets launched from the interior of the USSR, to reach any target in Europe or in the US with great accuracy.

I had not given up my plans for escape. I could not bear working under constant political pressure, and I wanted to spare my family from moving to USSR and did not want to expose them to an uncertain fate there.

I was helped by a coincidence. In July 1948 I was at Kharkov, where I had to inspect equipment in the huge power plant. There I met a German engineer named Wintersdorff, a former pilot, who had been shanghaied by the Russians during a visit to Soviet Zone Germany in 1946, and who was plotting an escape by air to Athens where he had a brother-in-law. By luck, a high official of the Ministry of War whom I met at Kharkov invited me to fly back to Moscow with him in his private plane, and agreed to take Wintersdorff, my "assistant" along. During the flight, with the aid of a revolver which Wintersdorff had obtained, we overpowered the official, the pilot, and the radio operator, put parachutes on them, and threw them from the plane. With Wintersdorff at the controls, we flew to Athens, from where I reached Germany.

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